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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER				
LOPEZ, CARLOS N				
ART UNIT				
1731				
PAPER NUMBER				

DATE MAILED: 11/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

### Office Action Summary

**Application No.**

09/867,856

**Applicant(s)**

HATTORI ET AL.

**Examiner**

Carlos Lopez

**Art Unit**

1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 14-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5/01.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Election/Restrictions***

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-13, drawn to method of making glass powder, classified in class 65, subclass 21.2.
- II. Claims 14-20, drawn to glass particles, classified in class 501, subclass 33.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made at concentration of the raw material oxide powder of 45% and/or at or below the melting temperature of the glass powder.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

During a telephone conversation with Edward Meilman on 10/16/03 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-13. Affirmation of this election must be made by applicant in replying to this Office action. Claims 14-20 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1) Claim 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "the oxide-converted amount of said water-soluble compound" lacks antecedent basis.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since

the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 1 recites the broader limitation that "said raw material powder having an average particle size which is not more than about 1/5 of said average particle size of said glass powder" and claim 1 also recites "raw material oxide powder has an average particle size which is more than about 1/25 of the average particle size of said glass powder" which is the narrower statement of the range/limitation.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2) Claims 1-3 and 10-13 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kodas et al (US 6,360,562) in view of Yoshikawa et al (JP 08-091 874). Kodas discloses using a spray-thermal decomposition method for producing hollow and non-hollow glass powders (Col. 31, lines 10ff). Kodas provides a liquid feed line 102 to aerosol generator 106 wherein the liquid is turned into aerosol 108. The aerosol is then fed to a furnace 110 where glass particles 112 are produced (Col. 5, lines19-27). The liquid feed line 102 includes multiple precursors materials which may be present in a single phase or alternatively one precursor could be in a solid state (colloidal silica) and a second precursor in a liquid phase (a metal salt) (Col. 6, lines1- 13). As shown in col. 26, lines 35ff, the liquid feed line 102 comprises metal precursors (deemed as the claimed water-soluble compound) such as nitrates, acetates and chlorides of a metal, which are highly soluble. In Col. 30, lines31ff, the liquid solution comprises a raw material oxide powder ( $\text{SiO}_2$ ) and a precursor for the intermediate oxides ( $\text{Al}_2\text{O}_3$ ). Thus the liquid feed line comprises a mixed solution having the claimed raw material oxide powder ( $\text{SiO}_2$ ), water-soluble compound (nitrates, acetates and chlorides), and a different glass forming element ( $\text{Al}_2\text{O}_3$ ) all mixed into a solution and thus resulting in applicant instant claim 1 mixed solution.

The resulting glass particles 112 range in size from  $0.05\mu\text{m}$  up to about  $20\mu\text{m}$  (Col. 30, lines 37-52). Raw material oxide powder range has varying sizes from  $1\mu\text{m}$ , smaller than  $0.5\mu\text{m}$ , smaller than about  $0.3\mu\text{m}$ , or smaller than about  $0.1\mu\text{m}$  (Col. 5, lines 40-43). Thus showing that Kodas raw material powder is either not more than 1/5

of the average particle size of the resultant glass powder as instantly claimed or is more than about 1/25 of the average particle size of the resultant glass powder as instantly claimed. The aluminosilicate glass composition of Kodas has a melting point in the range of 700 to 950 degrees Celsius as evidenced by Yoshikawa et al (Machine Translation). Kodas spray thermal decomposition temperature is in the range of 300 to 1500 degrees Celsius (Col. 27, lines 49) thus showing that Kodas thermal decomposition temperatures meets Applicant's claimed treatment temperature.

As shown in Tables I and II, the formed glass has an the raw material oxide powder ( $\text{SiO}_2$ ) concentration of 8 –26% by weight or 54-55% by weight falling in both of applicant's claimed raw material oxide powder concentration. Since the glass powder is formed from drops of the Kodas mixed solution, it would thus be inherent or at the least obvious that the concentration of Kodas solution has a concentration of less than and or optionally greater than 45% by weight as claimed by applicant

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3) Claims 4-13 are rejected under 35 U.S.C. 103(a) as obvious over Kodas et al (US 6,360,562) in view of Yoshikawa et al (JP 08-091 874). As noted above Kodas discloses a spray thermal decomposition method for making glass powder. Claims 4 further recite the concentration of the raw material oxide powder and solutes in the

mixed solution. It is noted that Kudas teaches that the concentration of the solutes is a result effective variable affecting the size of the resultant produced glass powder (Col. 27, lines 6-9). Thus it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have conducted routine experiments to determine the effective concentration that would yield the desired glass powder particle size.

Claims 6-13 recited various combinations either further limiting the particles size or changing the concentration of the raw material oxide powder in relation to the water-soluble compound. As noted above the concentration of the raw material oxide powders depend on the desired glass powder size. In the same manner Kudas teaches that the raw material oxide powder's size depends on the particular application of the glass powder (Col. 30, lines 39-41). Thus showing that the raw material oxide powder is a result effective variable, which through routine experimentation is selected based on the application of the glass powder, is being sought.

4) Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kudas et al (US 6,360,562) in view of Rosencwaig et al (US 4,257,799). As noted above Kudas discloses a spray thermal decomposition method for making glass powder. Kudas is silent treating the glass raw material oxide above the melting point of the glass powder melting point.

Rosencwaig discloses a vertical drop oven for making glass powders using the thermal decomposition method (Abstract and Col 4 lines 3-22). Rosencwaig et al teaches that thermal decomposition of a solution in a multi stage oven wherein the temperature of a stage is higher than the preceding stage results in high quality micro sphere glass



powders (Col. 2, lines 55ff). The stage having the higher temperature treats the glass powder precursor solution at temperature above 200 degrees Celsius of the melting point of the glass composition precursor solution. Thus at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have thermally decomposed Kodas solution with Rosencwaig multistage oven (wherein the solution is treated at a temperature above 200 degrees Celsius of the melting point of the glass composition) to thus produce high quality micro sphere glass powders.

As for claim 4, Kodas teaches that the concentration of the solutes is a result effective variable affecting the size of the resultant produced glass powder (Col. 27, lines6-9). Thus it would have been obvious to a person of ordinary skill in the art to conduct routine experiments to determine the effective concentration that would yield the desired glass powder particle size.

Claims 6-13 recited various combinations either further limiting the particles size or changing the concentration of the raw material oxide powder. As noted above the concentration of the raw material oxide powders depend on the desired glass powder size. In the same manner Kodas teaches that the raw material oxide powder's size depends on the particular application of the glass powder (Col. 30, lines 39-41). Thus showing that the raw material oxide powder is a result effective variable, which through routine experimentation is selected based on the application of the glass powder, is being sought.




***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References C-I and N in PTO-892 have been cited to show the state of the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carlos Lopez whose telephone number is (703) 605-1174. The examiner can normally be reached on Mon.-Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (703) 308-1164. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

  
STEVEN P. GRIFFIN  
SUPERVISORY PATENT EXAMINER  
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C.L